Yacht Club

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Conceptual classes and attributes (Analysis)

1. Member

- *Attributes*: memberID, username, password, email, phoneNumber, address, boats (a list of registered boats), paymentStatus & profileDetails (e.g., name, membership details, and payment history).
- *Explanation*: Members are the core actors of the yacht club system. They manage their own profiles, register boats, participate in events, and handle payments. The memberID uniquely identifies each member, and paymentStatus tracks whether they have fulfilled their financial obligations to the club.

2. Secretary

- *Attributes*: secretaryID, username & password
- *Explanation*: The secretary manages berth assignments, calendar events, and general club administration. They play a crucial role in berth allocation and event scheduling, both key operations in the yacht club.

3. Treasurer

- *Attributes*: treasurerID, username & password
- *Explanation*: The Treasurer handles all financial transactions, including member payments. They also generate payment reminders and keep financial records for auditing purposes.

4. Boat

- *Attributes*: boatID, ownerID (reference to Member), size, type (e.g., sailboat, powerboat, etc.), berthID (reference to Berth) & status (active/inactive).
- *Explanation*: Boats are owned by members and require berths within the marina. The Boat class tracks each boat's size, type, and current berth, which helps in calculating fees and allocating space in the marina.

5. Berth

- *Attributes*: berthID, location, Booked & assignedBoatID (reference to Boat).
- *Explanation*: Berths are physical spots in the marina where boats are moored. Each berth can only be assigned to one boat at a time, and the Secretary handles this allocation based on rules that ensure fairness and safety.

6. Payment

- *Attributes*: paymentID, memberID (reference to Member), amountDue, paymentMethod (e.g., credit card, SMS, direct payment), paymentDate & paymentStatus.
- *Explanation*: The Payment class handles the payment of membership fees, which may vary depending on the number of boats owned by a member. The payment status and method are critical for tracking whether a member is in good standing with the club.

7. Event

- ***Attributes***: eventID, title, startDate, endDate, location & participants (list of Members).
- ***Explanation***: The yacht club hosts various events, from meetings to competitions. The Event class tracks these, including which members are participating and the timing of the events.

8. Calendar
- ***Attributes***: calendarID & events (list of Event).
- ***Explanation***: The club maintains a calendar to track important dates such as competitions and meetings. The Secretary can add, modify, or remove events in this calendar.

Relationships/Associations (Analysis)

1. Member to Boat (1-to-many):
- A member can register multiple boats, but each boat is owned by only one member. This is important for calculating membership fees and managing boat-related operations such as berth assignments.

2. Boat to Berth (1-to-1):
- Each boat is assigned one berth, and each berth can accommodate only one boat. This relationship ensures proper marina management and berth allocation.

3. Member to thirdPartyPaymentSystem (1-to-many):
- A member can make multiple payments (membership fees, event fees, etc.), but each payment is associated with a single member. This relationship is necessary for tracking payment history and member account status.

4. Secretary to Berth (1-to-many):
- The Secretary manages multiple berths, assigning them to boats each season. This association reflects the Secretary's role in managing the marina's resources efficiently.

5. Member to Event (many-to-many):
- Multiple members can participate in multiple events. An event can involve many members, and a member can attend various club events, such as social gatherings or competitions.

6. Member to Calendar (1-to-many):
- A member can view multiple events on the club's calendar, but each event belongs to a single calendar. This relationship allows members to stay informed about club activities and important dates.

Explanation of Concepts and Associations (Analysis)

1. The yacht club members are the primary users of the system. They interact with the system to manage their profiles, register boats, make payments, and participate in events. The system must handle their information carefully, as it impacts the entire club's operations.

2. The secretary has a distinct administrative role, focusing on berth management and event scheduling. Their privileges are higher than those of regular members, and they need access to berth allocation tools and the club calendar.

3. The treasurer oversees all financial operations of the yacht club, including the management of dues and payment reminders. They require tools to track payments and maintain financial records.

4. Boats are essential to the system, as the yacht club revolves around their registration, mooring (berthing), and management. Each boat must be linked to a member and assigned a berth each season.
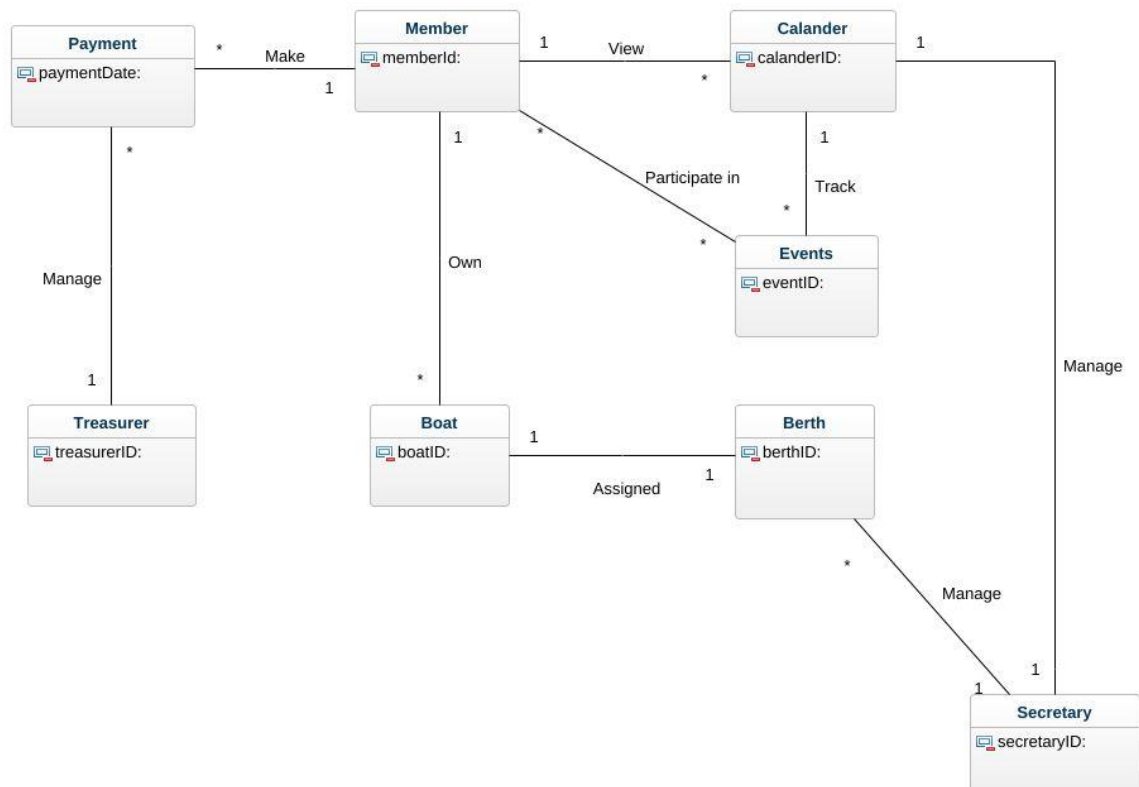
5. Berths represent the physical locations where boats are docked. The berth allocation process is one of the most critical parts of the yacht club's system, and it must be handled carefully to ensure safety and satisfaction among members.

6. Payments ensure that the club remains financially stable. The system must track various payment methods and statuses to ensure that all members pay their dues on time.

7. The club holds regular **events** that members participate in, such as meetings and competitions. Managing these events, including tracking participants and scheduling, is a key function of the system.

8. The club calendar is the central place for tracking and viewing all upcoming events. It ensures that members are informed about important club activities and dates.

Domain Model (Design)

Domain model summary

- *Members*: Interact with most aspects of the yacht club, including managing boats, payments, and event participation.
- *Secretary*: manages berth assignments, organizing events, and maintaining accurate records.
- *Treasurer*: oversees fee and updates status
- *Berths*: are assigned to boats